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Notice of Allowability

Application No.

10/614,825

Examiner

Zia R. Hashmi

Applicant(s)

KIENZLE ET AL.

Art Unit

2881

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 5/11/2005.
2. ☒ The allowed claim(s) is/are 1-21.
3. ☒ The drawings filed on 09 July 2003 are accepted by the Examiner.
4. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☒ All b) ☐ Some* c) ☐ None of the:
 1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|--|--|
| 1. <input type="checkbox"/> Notice of References Cited (PTO-892) | 5. <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 6. <input type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date _____. |
| 3. <input checked="" type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date <u>10/28/2003</u> | 7. <input type="checkbox"/> Examiner's Amendment/Comment |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9. <input type="checkbox"/> Other _____. |

DETAILED ACTION

Allowable Subject Matter

1. An "Amendment" was received on May 11, 2005, in response to Office Action of January 11, 2005. Independent claims 1, 13, 18, and 20 have been amended, as indicated.
2. Claims 1-21 are allowed.
3. The following is an examiner's statement of reasons for allowance:
4. With respect to amended independent claim 1, prior art fails to disclose a method of an electron-microscopic observation of a semiconductor arrangement, comprising emitting a primary energy beam from an illumination device; directing the primary energy beam to at least the an extended object field for releasing secondary electrons from the semiconductor arrangement; and imaging the secondary electrons emanating from the semiconductor arrangement within the extended object field with an electron microscopy optics onto a position-sensitive detector; wherein the semiconductor arrangement comprises a region with an upper surface provided by a first material and a recess which has an aspect ratio higher than 1.5 and which is surrounded by the upper surface and has a bottom provided by a second material, and wherein the imaging generates an image of the upper surface and the recess on the position-sensitive detector.
5. With respect to independent claims 13, prior art fails to disclose a method or an apparatus of electron-microscopic observation of a semiconductor arrangement with the

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illumination device described in Section (4) above, wherein the semiconductor illumination device comprises an electron source and the primary energy beam comprises a primary electron beam with an adjustable kinetic energy of electrons of the primary electron beam, and wherein, dependent upon the energy of the electrons of the primary electron beam, the first material has a secondary electron yield characteristic with a maximum (E_m) and a first neutral point (E_1) below the maximum (E_m) and a second neutral point (E_2) above the maximum (E_m), wherein the kinetic energy of the electrons of the primary electron beam is adjusted to an energy value (E_p) which is higher than an energy of the first neutral point (E_1) of the secondary electron yield characteristic of the first material and wherein the imaging generates an image of the upper surface and the recess on the position-sensitive detector.

6. With respect to independent claims 18 and 20, prior art fails to disclose an electron microscopy system comprising: a position-sensitive detector arranged at an image plane; an electron microscopy optics for imaging secondary electrons which emanate within an extended object field from an object on the position-sensitive detector; and an illumination device for directing a primary energy beam to at least the object field for releasing there secondary electrons therefrom, wherein the electron microscopy optics comprises an image-preserving energy filter having an adjustable energy window such that secondary electrons whose kinetic energies are outside of the energy window (E_{min} , E_{max}) are substantially not imaged on the position-sensitive detector, and wherein the electron microscopy system further comprises a controller for adjusting the energy window of the energy filter and a memory for storing at least one

setting for the energy window, wherein the illumination device produces as the primary energy beam an electron beam with an adjustable kinetic energy, and wherein the memory is provided for storing a setting of the kinetic energy of the electron beam associated with the setting of the energy window.

Claims 2-12, 14-17, and 21 are allowed by virtue of their dependencies on the independent claims 1, 13, 18, and 20.

Conclusion

7. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments of Statement of Reasons for Allowance".

8. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact Electronic Business Center (EBC) at 866-217-9197 (toll-free).

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Zia Hashmi whose telephone number is (571) 272-2473. The examiner can normally be reached between 8.30 AM- 5 PM. If attempts to reach

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the examiner by telephone are unsuccessful, the examiner's supervisor, John R. Lee can be reached on (571) 272-2477.

Zia Hashmi

May 26, 2005.



NIKITA WELLS
PRIMARY EXAMINER

05/26/05